

CLAIMS

- 1 1. An optical beam steering system for steering an optical beam, comprising:
  - 2 a) an optics system having a focal plane and an optical axis;
  - 3 b) a plurality of source elements positioned on said focal plane, each capable of providing a
  - 4 point source of radiation to said optics system, said optics system providing a collimated
  - 5 output; and,
  - 6 c) a small angle beam steerer for receiving said collimated output and redirecting said
  - 7 collimated output through a small angular deviation, the redirected output thus being
  - 8 transmitted in a desired direction without a need for mechanical gimbals, said desired
  - 9 direction capable of covering a large angular range with respect to said optical axis.
- 1 2. The system of Claim 1, wherein said small angle beam steerer is capable of steering in a range
  - 2 of about 0 to 5 degrees.
- 1 3. The system of Claim 1, wherein said small angle beam steerer comprises an optical phased
  - 2 array.
- 1 4. The system of Claim 1, wherein said optics system comprises a wide angle lens.
- 1 5. The system of Claim 1, wherein each source element comprises an end of a single mode optical
  - 2 fiber.
- 1 6. The system of Claim 1, wherein said plurality of source elements comprise a plurality of laser
  - 2 diodes.
- 1 7. The system of Claim 1, wherein said plurality of source elements comprises a plurality of vertical
  - 2 cavity surface emitting lasers (VCSEL).
- 1 8. The system of Claim 1, wherein said plurality of source elements comprises a two-dimensional
  - 2 optical fiber array.
- 1 9. The system of Claim 1, wherein said plurality of source elements comprise an optical switching
  - 2 network.

1 10. An optical beam steering system for steering an optical beam, comprising:  
 2 a) a small angle beam steerer for receiving a collimated laser beam and redirecting said  
 3 collimated laser beam through a small angular deviation;  
 4 b) an optics system having a focal plane and an optical axis, said optics system for focusing  
 5 said redirected laser beam onto said focal plane; and,  
 6 c) a plurality of detector elements positioned on said focal plane, each capable of receiving the  
 7 focused laser beam from a desired direction without a need for mechanical gimbals, said  
 8 desired direction capable of covering a large angular range with respect to said optical axis.

1 11. The system of Claim 10, wherein said small angle beam steerer is capable of steering in a  
 2 range of about 0 to 5 degrees.

1 12. The system of Claim 10, wherein said small angle beam steerer comprises an optical phased  
 array.

13. The system of Claim 10, wherein said optics system comprises a wide angle lens.

14. The system of Claim 10, wherein said plurality of detector elements comprise PIN's.

15. The system of Claim 10, wherein said plurality of detector elements comprise APD's.

16. A method for optical beam steering, comprising the steps of:

- 2 a) providing a point source of radiation to an optics system from a focal plane of said optics  
 3 system, said optics system providing a collimated output; and,  
 4 b) redirecting said collimated output through a small angular deviation utilizing a small angle  
 5 beam steerer, the redirected output thus being transmitted in a desired direction without a  
 6 need for mechanical gimbals, said desired direction capable of covering a large angular  
 7 range with respect to an optical axis of said optics system.

1 17. The method of Claim 16, wherein said step of redirecting said collimated output comprises small  
 2 angle steering in a range of about 0-5 degrees.

1 18. The method of Claim 16, wherein said step of redirecting said collimated output comprises  
 2 utilizing an optical phased array.

- 1 19. The method of Claim 16, wherein said step of redirecting said collimated output comprises
- 2 utilizing a wide angle lens.

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